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Box SF547

AccessLevel Public

Division Waste Management

Section Superfund

Program IHS (IHS)

DocCat Facility



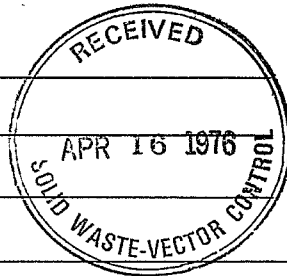
REFUSE COLLECTION AND SOLID  
WASTE DISPOSAL PLAN

CLEVELAND COUNTY  
NORTH CAROLINA

CLEVELAND COUNTY HEALTH DEPARTMENT  
315 GROVER STREET  
SHELBY, NORTH CAROLINA 28150  
704-487-8511

**MESSAGE** DATE April 15, 1976

**REPLY** DATE:



Dear Mr. Perkins:

I need your recommendations as soon as  
possible. We are holding any payments until  
you have evaluated the preliminary plans  
and made recommendations.

Sincerely,

G. W. Moore

SENT BY \_\_\_\_\_

ANSWERED BY \_\_\_\_\_



FORM NO. PK102R-3

AVAILABLE FROM BUSINESS ENVELOPE MANUFACTURERS, INC. • BRONX, N.Y. • CLINTON, TENN. • MELROSE, PARK, ILL. • ANAHEIM, CALIF.

REFUSE COLLECTION AND SOLID WASTE DISPOSAL PLAN  
CLEVELAND COUNTY, NORTH CAROLINA

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COUNTY COMMISSIONERS

JACK PALMER, JR., CHAIRMAN

COLEMAN W. GOFORTH

B. E. SIMMONS

L. E. HINNANT

C. M. PEELER, JR.

JOSEPH R. HENDRICK  
COUNTY MANAGER

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PLANNING COORDINATION BY THE CLEVELAND COUNTY HEALTH DEPARTMENT

SEWER, WATER AND AIR SECTION

G. W. MOORE, CHIEF

---

PREPARED BY:

HOFFMAN, BUTLER & ASSOCIATES, INC.  
ASHEVILLE, NORTH CAROLINA  
7595 D - APRIL, 1976  
CAMERON R. DANIELS, P. E.

REFUSE COLLECTION AND SOLID WASTE DISPOSAL PLAN  
CLEVELAND COUNTY, NORTH CAROLINA

I. INTRODUCTION

The quest for better refuse disposal in Cleveland County accelerated in March of 1971 when the North Carolina State Board of Health adopted the RULES AND REGULATIONS PROVIDING STANDARDS FOR SOLID WASTE DISPOSAL. These standards provided the legal and planning base for an effective solid waste management program in the State of North Carolina from which this report is derived.

II. DESIGN CRITERIA

Solid waste is produced by all constituents of the county community. Residences, commercial establishments, and industry each make a contribution to the total refuse disposal problem. Variations in quantity occur from each of these contributors according to many variables. An average estimate of quantity contributed by each member of the county community is needed for the design of disposal facilities for the county.

III. REFUSE UNIT QUANTITY

Records of actual collected refuse weights began on a selected basis beginning December 1975 and continuing for about a one (1) month period. (See Appendix A). Data from these records indicate an average refuse quantity of approximately 1.8 lb. per person per day. National averages approximate the data obtained in the selected weighings and confirm their validity and justification for use.

A recently completed landfill site, shown on the accompanying plans, was checked with the above figure and determined that the actual waste quantity and the estimated quantity was sufficiently equal to justify the design rate of 2.1 lb/cd at a 1,200 pounds per cubic yard (lb/yd.<sup>3</sup>) compaction rate.

#### IV. REFUSE PROJECTED QUANTITY

Presently there is an estimated 85% of the county's residents utilizing the landfill site by depositing their household refuse in one of the county's eight (8), forty (40) cubic yard container sites. There are an additional four (4) sites planned which is estimated to be made available by 1979 at which time an estimated 95% of the county's population will be utilizing the landfill.

The county has granted franchised areas to three (3) independent contract haulers. These haulers contract with the county to maintain and empty the 40 yard containers at the various sites throughout the county. The 40 yard container site method, and private contract haulers, as opposed to county owned and operated facilities, has proved very feasible with many advantages to the county. This type system operation will probably remain and will be utilized in the future. (Refer to Sheet 2 of the plans).

Population data, on which estimated quantities of refuse are based, are taken from the report "Population and Economy Study" by the Isothermal Planning and Development Commission, February, 1974. Appendix B is a reproduction of the population projections used as estimated in the report.

To determine the yearly quantity production rate of refuse it is assumed that the 2.1 lb/cd rate will include the domestic and industrial refuse quantity and will remain approximately constant for the design period.

Also, the projected refuse quantity will be linearly proportional to the population growth rate with 85% present and 95% future use rate.

Graph One (1) is a representation of the projected yearly refuse production quantity. Differences between the ideal production and expected production can be attributed to open burning, open dumping and other factors that contribute to unsightly illegal dumping and home burning of refuse.

#### V. REFUSE COMPOSITION

Refuse collected and disposed of at the landfill site consists of residential, commercial and industrial refuse. Residential and commercial refuse are of typical composition while industrial refuse consists heavily of textile waste due to the concentration of textile industries within the county. Extremely bulky materials are absent from industrial refuse especially in the textile industry. Thus a compaction rate of 1,200 lb/yd.<sup>3</sup> is not unrealistic and is used for volume design.

#### VI. REFUSE OPERATIONAL PLAN

The Cleveland County Landfill is operated by the authority of the Cleveland County Board of Commissioners, Mr. Jack Palmer, Jr., Chairman. The County Manager, Joseph Hendrick, delegates the direct responsibility for system operation to the Cleveland County Health Department, Sewer, Water & Air Section, Mr. G. W. Moore, Chief. Mr. Moore has the management responsibility to assure compliance with the State Health Department requirements. Also, Mr. Moore has the responsibility of insuring adequate collection throughout the county at a reasonable cost to the

REFUSE QUANTITY-CUBIC YARDS PER YEAR

# BASIS FOR GRAPH

2.1 LB. PER PERSON PER DAY OF REFUSE  
1200 LB. PER CUBIC YARD IN PLACE COMPACTION

BEYOND 1990 ESTIMATE  
INCREASE AT 1.5% PER  
YEAR.

IDEAL REFUSE AMOUNT  
@ 100% POPULATION USE

ACTUAL EXPECTED REFUSE AMOUNT  
USED AS BASIS FOR LANDFILL DESIGN

BY 1980'S END ALL PROPOSED  
CONTAINER SITES TO BE IN  
OPERATION

ESTIMATED REFUSE QUANTITY  
FOR  
CLEVELAND COUNTY, N.C.

CLEVELAND COUNTY POPULATION (1)  
AVERAGE DENSITY = 155 PER. SQ. MILE

1970 72 74 76 78 1980 82 84 86 88 1990

(1) POPULATION & ECONOMY STUDY, ISOTHERMAL PLANNING & DEVELOPMENT COMMISSION, FEB. 1974



county's residents and coordination of the systems working with the landfill supervisor on the site.

Mr. Lee Self is the Landfill Supervisor whose responsibility is to place the operational plans into a positive fill operation with assistance from 5 employees for operation and maintaining the necessary equipment and materials.

#### VII. LANDFILL OPERATIONAL PLAN - GENERAL

Reference should be made to the accompanying drawings and the "Summary of Landfill Capacity" shown in Appendix C. Area development should follow the plan development schemes with the expected year completion as shown in the summary. Minor alterations of this scheme can be expected but the plan should generally be followed with plan up-dates submitted periodically as necessary.

Fourty — cubic yard public containers are placed throughout the county where pick-up is on a daily or as necessary basis. Eight (8) sites are presently operational with an estimated four (4) additional sites to be in operation by 1980. All public container sites are open 24 hours for the convenience of the county's residents. (Exception: Patterson Springs site has a compactor unit and is open from 8:00 AM to 7:00 PM daily).

The landfill site is open from 8:00 AM to 4:30 PM, Monday through Saturday and is restricted to prevent scavenging and illegal dumping.

The existing landfill site is expected to be completed near the year 2000.

#### EQUIPMENT

Landfill equipment consists of the following inventory:

- A. 1 - Rex Compactor - Dozer
- B. 1 - Front-End Loader
- C. 1 - Crawler Dozer
- D. 1 - Earth Pan
- E. 1 - Motor Grader

(See Appendix D for more detailed inventory.)

#### VIII. FUTURE SITE USE

The entire landfill site is leased by the County of Cleveland from the City of Shelby for use as a solid waste disposal area. Upon completion of various sections of the landfill operation, these sections revert to the City for their use.

The City has leased a portion of completed sections for a skeet shooting range and other portions are used for the police firing range. It is expected that some type of recreational facilities will be planned for other areas of the landfill as sections are completed. No other definite plans by the City are indicated at this date.

APPENDIX A

KINGS MTN.

Industrial

<u>Truck Size</u>	<u>Empty Wt.</u>	<u>Loaded Wt.</u>	<u>Loads/wk.</u>
20 yd.	20,500	30,800	9 Loads/wk.

Residential

<u># Pickups</u>	<u>Truck Size</u>	<u>Empty Wt.</u>	<u>Loaded Wt.</u>	<u>Loads/wk.</u>
288	20 yd. (once wk.)	18,700	27,040	5/wk. <i>7.24</i>
416	18 yd. (twice wk.)	21,000	28,000	9/wk. <i>9.21</i>

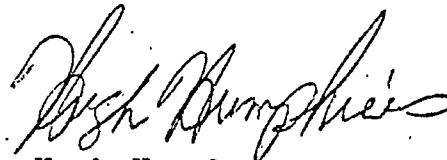
*1.03 bl/day*  
*1.20 bl/day*

November 17, 1975

Mr. G. W. Moore  
Box 1528  
Shelby, North Carolina 28150

Dear Mr. Moore:

Enclosed is a copy of the weights of our residential and commercial pick-ups. If we can be of further assistance, please call me.

A handwritten signature in cursive script, reading "Hugh Humphries".

Hugh Humphries  
Director of Public Works

COMMERCIAL 85 CUSTOMERS of 126

#93 FULL WEIGHT	27,500
EMPTY WEIGHT	<u>18,900</u>
	8,600

3.61 lb/day

#93 85 CUSTOMERS of 126

FULL WEIGHT	30,200
EMPTH WEIGHT	<u>18,900</u>
	11,300

@ 4/household  
4.75 lb/day

RESIDENTIAL

#105 FULL WEIGHT	33,230
EMPTY WEIGHT	<u>21,060</u>
448 CUSTOMERS	12,170

@ 79 lb. 9.7 lb/day

RESIDENTIAL

#105 FULL WEIGHT	31,430
EMPTY WEIGHT	<u>20,820</u>
276 PICK UPS	10,610

TOTAL RESIDENTIAL CUSTOMERS

5,695

9.41 1.37 lb/day

16.1

SOLID WASTE PROGRAM FOR THE COUNTY OF CLEVELAND  
SURVEY OF SOLID WASTE PRODUCTION

1. Company: Cleveland Container Sec  
Address: \_\_\_\_\_  
Individual: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_

2. Estimate Amount of Refuse

Daily 5760 lbs. Weekly \_\_\_\_\_ lbs.

3. What does Your Refuse Consist of?  
Indicate (1), (2), (3) . . . . etc. in order of decreasing quantities:

Paper \_\_\_\_\_  
Cardboard \_\_\_\_\_  
Rubber \_\_\_\_\_  
Plastics \_\_\_\_\_  
Metals \_\_\_\_\_  
Food Waste \_\_\_\_\_

Cloth \_\_\_\_\_  
Leather \_\_\_\_\_  
Glass \_\_\_\_\_  
Cartons \_\_\_\_\_  
Wood \_\_\_\_\_  
Other Household Garbage

4. Method of Disposal:

Municipal Collection \_\_\_\_\_  
Private Contractor Collection ✓ \_\_\_\_\_  
Hauled By Own Trucks. Where? \_\_\_\_\_  
On-Site Incineration \_\_\_\_\_

5. How Often is Your Refuse Collected:

1 Times A Week  
\_\_\_\_\_ Times A Month  
\_\_\_\_\_ Other

*10/16/64*  
*Truck # 5*  
*144 Houses*

*1.43 lb/day*

*M.4*

SOLID WASTE PROGRAM FOR THE COUNTY OF CLEVELAND  
SURVEY OF SOLID WASTE PRODUCTION

1. Company: Cleveland Container Service  
Address: P.O. 193 Shelby  
Individual: Jack Williams  
Title: MANAGER  
Date: 11-10-75

2. Estimate Amount of Refuse

Daily 10,870 lbs. Weekly \_\_\_\_\_ lbs.

3. What does Your Refuse Consist of?  
Indicate (1), (2), (3) . . . etc. in order of decreasing quantities:

Paper \_\_\_\_\_  
Cardboard \_\_\_\_\_  
Rubber \_\_\_\_\_  
Plastics \_\_\_\_\_  
Metals \_\_\_\_\_  
Food Waste \_\_\_\_\_

Cloth \_\_\_\_\_  
Leather \_\_\_\_\_  
Glass \_\_\_\_\_  
Cartons \_\_\_\_\_  
Wood \_\_\_\_\_  
Other HOUSEHOLD GARBAGE

4. Method of Disposal:

Municipal Collection \_\_\_\_\_  
Private Contractor Collection \_\_\_\_\_  
Hauled By Own Trucks. Where? COUNTY LANDFILL  
On-Site Incineration \_\_\_\_\_

5. How Often is Your Refuse Collected:

5 Times A Week  
\_\_\_\_\_ Times A Month  
\_\_\_\_\_ Other

# HOUSES SERVED 269  
Truck # 6

1.44 MT/Day

No. 5



SOLID WASTE PROGRAM FOR THE COUNTY OF CLEVELAND  
SURVEY OF SOLID WASTE PRODUCTION

1. Company: City County (Patterson)  
Address: \_\_\_\_\_  
Individual: \_\_\_\_\_  
Title: \_\_\_\_\_  
Date: \_\_\_\_\_
2. Estimate Amount of Refuse  
Daily \_\_\_\_\_ lbs. Weekly 53,970 lbs.
3. What does Your Refuse Consist of?  
Indicate (1), (2), (3) . . . . etc. in order of decreasing quantities:
- |                  |                                |
|------------------|--------------------------------|
| Paper _____      | Cloth _____                    |
| Cardboard _____  | Leather _____                  |
| Rubber _____     | Glass _____                    |
| Plastics _____   | Cartons _____                  |
| Metals _____     | Wood _____                     |
| Food Waste _____ | Other <u>Household Garbage</u> |
4. Method of Disposal:
- Municipal Collection \_\_\_\_\_  
Private Contractor Collection ✓ \_\_\_\_\_  
Hauled By Own Trucks. Where? \_\_\_\_\_  
On-Site Incineration \_\_\_\_\_
5. How Often is Your Refuse Collected:
- 3 Times A Week  
\_\_\_\_\_ Times A Month  
\_\_\_\_\_ Other

APPENDIX B

# POPULATION PROJECTIONS

## REGION C

County	1940	1950	1960	1970	1940--1970 % Increase	1980	1990
Cleveland	58,055	64,357	66,048	72,556	25.0	79,000	90,500
McDowell	22,996	25,720	26,742	30,648	33.3	36,300	43,000
Polk	11,874	11,627	11,395	11,735	~ 1.2	12,500	13,500
Rutherford	45,577	46,356	45,091	47,337	3.9	49,500	53,000
TOTALS	138,502	148,060	149,276	162,276	17.2	177,300	200,000

Source: State Planning Division, North Carolina State Department of Administration

APPENDIX C

# SUMMARY OF LANDFILL CAPACITY

## BASED UPON USEAGE CHART

<u>REMARKS</u>	<u>YEAR</u>	<u>ESTIMATED QUANTITY</u>	<u>SUMMATION QUANTITY</u>	<u>PROPOSED LANDFILL AREA USEAGE</u>
	1976	42,900	42,900	A
	1977	44,200	87,100	A & B
	1978	45,500	132,600	B
	1979	46,600	179,200	B
	1980	47,600	226,800	B & C
	1981	48,200	275,000	C & D
1983 - Develop East	1982	48,800	323,800	D
Site for use in 1984 -	1983	49,400	373,200	D
Review Experience	1984	50,100	423,300	D & E
Useage and Revise	1985	50,700	474,000	E
Operational Plan	1986	51,500	525,500	E
as Necessary	1987	52,200	577,700	E
	1988	53,100	630,800	E
	1989	54,000	684,800	E
	1990	54,900	739,700	E & F
	1991	55,700	795,400	F
	1992	56,500	851,900	F
	1993	57,400	909,300	F
	1994	58,300	967,600	F
	1995	59,100	1,026,700	F & G
	1996	60,000	1,086,700	G
	1997	60,900	1,147,600	H
	1998	61,800	1,209,400	H
	1999	62,800	1,272,200	I
PROJECTED END	2000			

APPENDIX D

## DESCRIPTION

QTY TOTAL COST

GRAY SHELVES		1	50.00
FANS	GREEN	1	20.00
CHAIR SIDE	GREEN	1	40.00
FILE LETTER		1	100.00
DESK SECRETARY	GRAY	1	150.00
CHAIR SIDE	GREEN STRAIGHT BACK	1	40.00
CHAIR SIDE	GREEN STRAIGHT	1	13.86
CHAIR SIDE	GREEN STRAIGHT	1	13.86
CHAIR SECRETARY	GREEN UNITED	1	32.50
CHAIR ARM	GREEN AND GRAY	1	25.36
CHAIR SIDE		1	20.00
EAR PHONES		4	20.00
SAFETY GLASSES		4	20.00
HARD HATS - YELLOW		4	16.80
AIR WRENCH		1	160.00
TOOL BOX & WRENCHES		1	250.00
OIL PUMPS		2	240.00
FRONT END LOADER INTERNATIONAL 250-C		1	55,929.00

## DESCRIPTION

QTY TOTAL COST

11 cu. yard (We are requesting a 22 cu yd. in  
1973 HANCOCK SELF-LOADING PAN *our 76-77 Budget*) 1 44,000.00

GREASE GUN 1 200.00

AIR COMPRESSOR 1 550.00

MOTOR ON COMPRESSOR 1 150.00

12000 BTU AIR CONDITIONER MODEL #S1240GT 1 175.00

1974 CHEV. TRUCK PICK UP 1 3,300.00

WEILDER 1 368.98

TORCH W/ACCES. 1 30.00

BULLDOZER CATIPILLER D-6 1 53,729.82

HOT PRESSURE WASHER 1 2,054.85

1973 REX-COMPACTOR (WITH HTR435 FAN MODEL #607 BOUGHT 1975) 1 58,150.96

CLOSED CABINET WITH SHELVES (NO TAG) 1 40.00

DEPT. TOTAL 219,890.99

219,890.99

*Pitt*

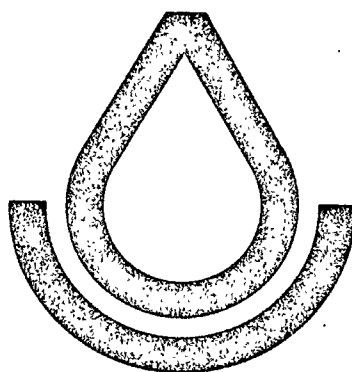
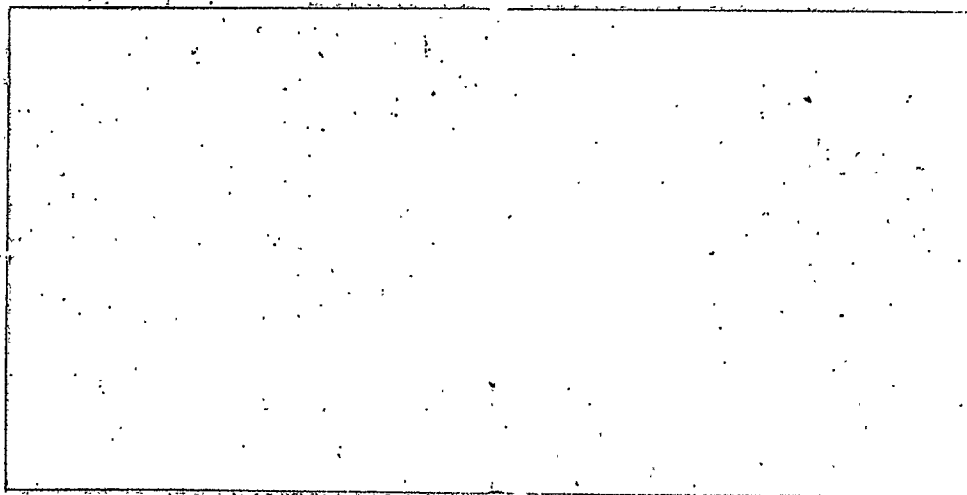


EXHIBIT I

SOIL SURVEY

# INVENTORY AND EVALUATION

SOIL AND WATER RESOURCES



SOIL CONSERVATION SERVICE  
U.S. DEPARTMENT OF AGRICULTURE

TITLE: Soil Information

FOR: G. W. Moore

BY: Jim Boggs  
District Conservationist

IN CO-OPERATION WITH: Cleveland Soil & Water  
Conservation District

# INVENTORY & EVALUATION

\* {  
INDIVIDUAL  
GROUP  
UNIT OF GOVERNMENT

REQUESTED BY Dean Harrill and Pete Moore LOCATION Cleveland County  
(Landfill)

ASSISTED BY Jerry Stimpson DATE 12/9/74

SITUATION: Mr. Dean Harrill and Pete Moore of the Cleveland County Health  
Department requested a soil investigation of the above property to determine  
the limitations of the soil for use as a sanitary landfill. This investigation  
is not a substitute for detailed geologic investigations.

FINDINGS: 1. The soils mapped 31 B, C and 25 C 3 are deep well-drained soils  
and the soils mapped 324 D, E are shallower well-drained soils, both developed  
on weathered acid igneous and metamorphic rock. These soils have a deep red  
clay subsoil which when wet is plastic, sticky, difficult to excavate, grade  
and compact. 2. The soils on the steeper slopes are susceptible to erosion  
and will require more management to eliminate excessive runoff. 3. With the  
exception of the soils around the drains, the seasonal  
high water table is greater than 5 feet and should not be a limiting factor for  
landfill uses. 4. In the soil mapped 324 D, rippable rock was encountered at  
about 3½ feet, and the 31. B on the back side of the site contains some stones,  
these areas may warrant further study.

*Stabilize all disturbed areas with grass and/or  
Trees.*

\* Circle appropriate category.



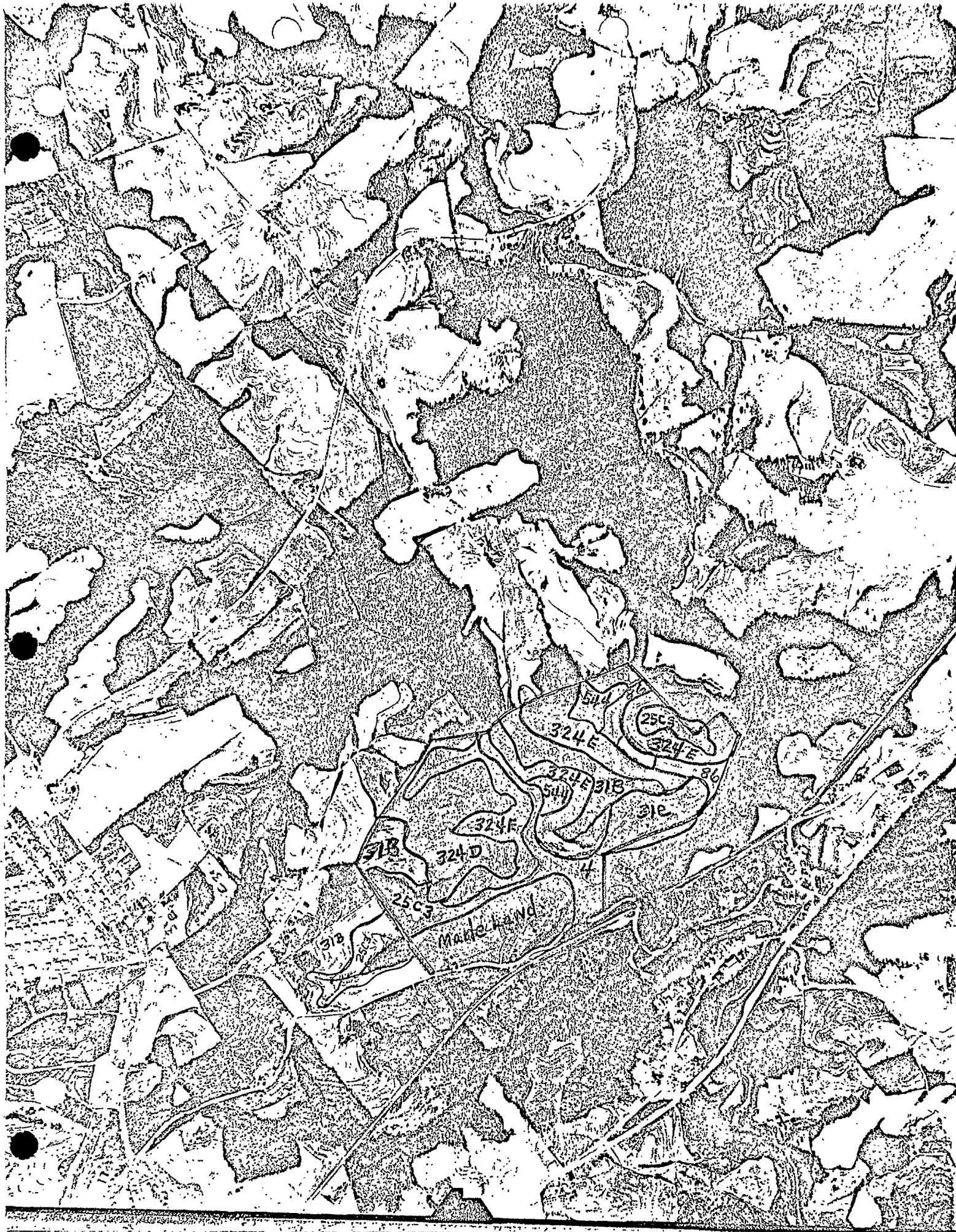


EXHIBIT II

SUBSURFACE SOIL SURVEY

# INVENTORY & EVALUATION

\* {  
INDIVIDUAL  
GROUP  
UNIT OF GOVERNMENT

REQUESTED BY Pete Moore LOCATION Cleveland County

ASSISTED BY Jerry Stimpson & Jim Boggs DATE 5/7/75  
(Landfill)

SITUATION: Mr. Pete Moore of the Cleveland County Health Department requested that Soil Conservation Service personnel be present to participate in a detailed soil investigation of the Cleveland County landfill.

FINDINGS: 1. Seven borings were made with well drilling equipment at selected sites on the landfill.

2. It was determined that at all sites, the soil is of the Cecil Series, this soil is a deep, well drained, red, clayey soil. On the steeper slopes a shallower version of the Cecil Series occurs. The subsoil of these soils is kaolinitic clay and when wet is plastic and sticky; however, these clays do not shrink and swell excessively therefore, compaction should not be

~~SUGGESTED SOLUTIONS~~ extremely difficult.

3. At six of the seven borings hard rock was not encountered above 25 feet, the exception was at boring #5 where hard rock was encountered at 13 feet.

4. In each soil profile the subsoil was red, firm, clay to a depth of about four feet; on an average from about four feet to twelve feet the soil was mottled yellow and red, friable, loam; at 12 feet rippable rock fragments and quartz veins were encountered that would crush between the thumb and index finger, with depth the rock fragments increased and became hard to a depth of about twenty-five feet at which point hard <sup>rock</sup> soil was encountered, at site number 3 rock

\* Circle appropriate category.



# INVENTORY & EVALUATION

\* {  
INDIVIDUAL  
GROUP  
UNIT OF GOVERNMENT

REQUESTED BY Pete Moore

LOCATION Cleveland County

(Landfill)

ASSISTED BY Jerry Stimpson & Jim Boggs

DATE 5/7/75

CONTINUED:

~~STUDY~~ was not encountered at 25 feet and at a depth of about 35 feet we began to get water.

5. Based on the above investigation and previous studies this site with proper conservation and management is rated as suitable as a landfill site.

SUGGESTED SOLUTION(S):

\* Circle appropriate category.

EXHIBIT III

LANDFILL SITE PHOTOGRAPHS

1-15-76

1:60-0

APPROXIMATE

TOTAL TRACT 190 ACRES

CLEVELAND COUNTY  
ANIMAL SHELTER

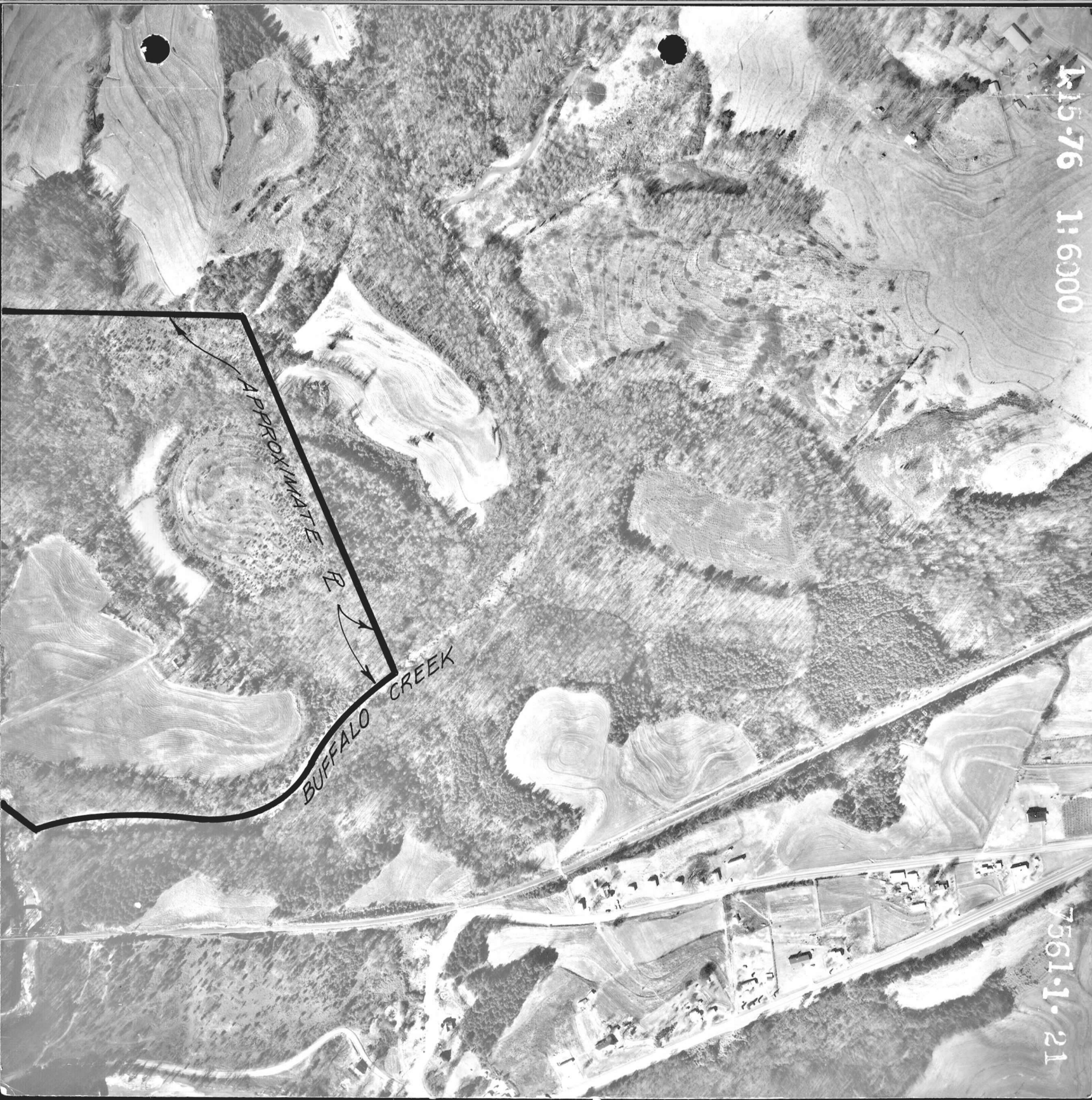
COMPLETED LANDFILL SITE

TO SHELBY S.R. 1920

SEABOARD COASTLINE R.R.

7561-1-23

K-15-76 1:6000



7561.1.21